Wearable Fitness Technology and Exercise Change Behavior

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The Center for Disease Control and Prevention reports that over half of Americans are not meeting required guidelines for physical activity and fitness which can reduce many chronic diseases (CDC, 2014). Commercial wearable devices have emerged over the past decade and the adoption of these monitoring devices has the potential to promote exercise behavior from built in functions and applications. Sophisticated portable fitness technologies have been introduced including “smart watches” (e.g. Microsoft Band, Apple Watch) and wearable fitness technologies (WFTs) such as Nike Fuel Band and fitbit. The increased functionality of these devices is appealing to an array of individuals, both physically active and inactive. Research in personal informatics systems reveals wearable devices can increase physical activity behaviors (Fritz et al., 2014; Fogg, 2003). However, more research is needed on why these devices change exercise behavior among users. More importantly; whether behavioral change is also occurring among sport, fitness and health professionals that could potentially utilize WFT’s in practice has not been examined. This study explores both questions in a two stage design in order to examine potential solutions to decrease levels of physical activity through WFT devices.

The Transtheoretical Model (TTM) was adopted in this study to examine the cognitive and behavioral changes that occur from a WFT device among users and industry professionals. The TTM model is a stage-change model which describes different phases involved in the acquisition and maintenance of behavior (Prochaska & Marcus, 1994). The stages include precontemplation, contemplation, preparation, action, and maintenance. The benefit of staging behavioral change among WFT device users is that reflective and persuasive technologies designed to support insight into behavior through self-monitoring and conditioning can be examined at various stages. In addition, staging behavioral change of industry professionals’ adoption of WFT device into practice can be examined to optimize the effectiveness of these devices on promoting physical activity.

The current study incorporates a qualitative two stage sequential design to examine behavioral change using perceptual data (Bryman, 2004). The WFT device selected for this study was the recently introduced Apple Watch as it appeals to a broad market, including those interested in a smart watch with a suite of health related applications. The first phase, which has been completed, recruited eight apple iPhone users to journal their experiences over the course of one month while using the watch and exercising. The subjects were between the ages of 25-35, six male and two female, engaged in limited daily physical activity, and had not previously used the device. Subjects were placed into TTM based on daily fitness activity and intent to change activity levels resulting in the staging: maintenance (2), action (1), preparation (2), contemplation (1), and precontemplation (2). Watches were purchased and provided for the project. Subjects were recruited from an academic research group that would be involved in the second phase of the study design. The second phase, to be completed, will utilize this information to inform interviews of sport, fitness and health professionals to examine how the Apple Watch has impacted their clients and could potentially impact their profession. The journal data was recorded in excel and collated by two researchers.

The analysis of qualitative data was informed by Creswell (1998) with thematic coding of categories based upon the TTM.

Data from phase 1 revealed that increased awareness and self-efficacy positively influenced exercise behavior among users. For the precontemplation stage users, exercise behavior changed through cognitive awareness. As individuals were made aware of their physical activity levels by the watch, they increased the frequency of exercise. Individuals categorized within the contemplation, preparation, action, and maintenance stages exhibited no exercise change. These individuals were already aware of their exercise behaviors and thus the awareness reinforcement provided by the device did not substantially change exercise behavior.

The results confirm existing literature on the utility of persuasive and reflective technologies found in WFT’s to promote physical activity change. Specifically, prior to using the watch, individuals in the precontemplation stage
were unaware of a problem (i.e., physical inactivity) and through self-monitoring, increased motivation and social effects became more active (Fritz, 2014; Marcus et al., 1992). For individuals in other stages and already aware of physical activity levels, the watch helped monitor and maintain behavioral levels by providing self-reflection, goals and rewards, and allowed sharing of data which promoted confidence in their ability to perform a given behavior (Bandura, 1977; Fritz, 2014).

Phase two of this study will take place between January-March, 2016 and conducted by subjects that participated in phase 1. Industry professionals working as personal trainers, physical therapists, fitness managers, and athletic trainers will be recruited and semi-structured in-depth interviews conducted. The interviews will be designed to gather perceptions of whether WFT’s have impacted their clients and assess their level of behavioral change in terms of adopting and integrating WFT’s into their services. These questions will seek to uncover the professional’s level of familiarity with WFT devices and their functional utility; whether WFT’s have influenced their clients’ behavior; assess any negative consequences; whether WFT’s have impacted their job; would they consider integrating WFT’s into their services; if so, what kind of platform could be used to generate client reports and accountability. The interviews will be recorded and transcribed. A three-step analytic approach suggested by Creswell (2009) will be used to examine the data in order to examine stages of behavioral change among industry professional for the use of WFT devices and whether these devices can be utilized in practice to promote physical activity levels. The results will be presented at the North American Society for Sport Management conference.